This Page Is Inserted by IFW Operations and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

As rescanning documents will not correct images, please do not report the images to the Image Problem Mailbox.

WHAT IS CLAIMED IS:

5

10

15

20

25

30

35

- 1. A charged beam exposure apparatus comprising:
- a charged beam generating source;
- a first flat board which has a plurality of first aperture sections having rectangular apertures arranged close to one another and electrodes for deflecting the beam passing through the first aperture sections at the respective apertures; and
- a second flat board which is arranged parallel with said first flat board and has second aperture sections having basic figure apertures for shaping the beam, which passes or passed through the first aperture sections.
- 2. The charged beam exposure apparatus as in claim 1, further comprising:
- a first deflector to emit the beam passed through the first aperture sections to the second aperture section;
- a second deflector to emit the beam passed through the second aperture section to an arbitrary position of a sample; and
- a lens to image the beam passed through the second aperture section onto the sample.
- 3. The charged beam exposure apparatus as in claim 1, wherein the first aperture sections are arranged cyclically.
- 4. The charged beam exposure apparatus as in claim 1, wherein said first flat board has the aperture sections and the electrodes according to LSI wiring pitches.
- 5. The charged beam exposure apparatus as in claim 1, wherein said second flat board has the basic figures according to LSI wiring pitches.
- 6. The charged beam exposure apparatus as in claim 1, wherein a ratio of a width of the first aperture sections to an interval between the first aperture sections is larger than a ratio of a width of the second aperture sections to an interval between the second aperture sections.
- 7. The charged beam exposure apparatus as in claim 1, wherein a form of the apertures of the second aperture sections has linear wiring patterns in vertical and horizontal directions.
- 8. The charged beam exposure apparatus as in claim 7, wherein a form of the apertures of the second aperture sections further has a connection pattern which connects vertical and horizontal wirings.
 - 9. The charged beam exposure apparatus as in claim 1, wherein a

form of the apertures of the second aperture sections has a linear wiring pattern in a direction where a vertical direction and a horizontal direction do not form a right angle.

10. The charged beam exposure apparatus as in claim 1, wherein a form of the apertures of the second aperture sections has a standard cell pattern.

5

10

15

20

25

30

35

11. The charged beam exposure apparatus as in claim 1, wherein the second aperture sections comprises:

first slits which are arranged parallel with vertical sides of the rectangles and opposed to one another with equal intervals; and

second slits which are arranged parallel with horizontal sides of the rectangles and opposed to one another with equal intervals.

- 12. The charged beam exposure apparatus as in claim 11, wherein lengths of the first slits are equal, and both end portions are arranged on a line, and their number is the same as a number of lines of the lattice.
- 13. The charged beam exposure apparatus as in claim 11, wherein lengths of the second slits are equal, and both end portions are arranged on a line, and their number is the same as a number of rows of the lattice.
 - 14. An exposure data creating method comprising:

dividing layout data of a semiconductor apparatus into sizes of basic figure apertures which take reduction in exposure into consideration;

classifying the divided layouts according to the basic figure apertures; and

creating first data which prevent a beam emitted onto overlapped portions of the divided layouts and the basic figure apertures from being deflected.

15. The exposure data creating method as in claim 14, further comprising:

creating second data comprises

positions of the divided layouts in the layout of the semiconductor apparatus;

names of the classified basic figures; and addresses to be capable of reading the first data, wherein the positions, the names and the addresses have correspondence to one another.

16. An exposure data creating method comprising:

dividing chip data into units or sizes of standard cell patterns; classifying the divided chip data according to the standard cell patterns in library; and

obtaining overlapped portions of the divided chip data and the classified standard cell patterns so as to create data which shows existence/non-existence of deflection of a beam on a blanking aperture array.

17. An exposure data creating method comprising:

5

10

15

20

25

30

35

dividing layout data of a semiconductor apparatus into vertical line patterns and horizontal line patterns which take reduction in exposure into consideration;

thickening widths of the vertical line patterns so as to create a first pattern where the adjacent vertical line patterns are integrated;

thickening widths of the horizontal line patterns so as to create a second pattern where the adjacent horizontal line patterns are integrated;

dividing the first and second patterns into sizes of basic figure apertures which take reduction in exposure into consideration;

classifying the divided first and second patterns according to the basic figure apertures; and

obtaining overlapped portions of the divided first and second patterns and the classified basic figure apertures so as to create first data which show existence/non-existence of deflection for each aperture sections on an aperture array.

18. The exposure data creating method as in claim 17, further comprising:

creating second data comprises

positions of the divided first and second patterns in the layout of the semiconductor apparatus;

names of the classified basic figures; and addresses to be capable of reading the first data, wherein the positions, the names and the addresses have correspondence to one another.

19. A recording medium to record exposure data being capable of being read by a computer, the exposure data comprising:

first data to prevent a beam emitted to overlapped portions of layout data of a semiconductor apparatus, which are divided into sizes of basic figure apertures which take reduction in exposure into consideration, and the basic figure apertures for classifying divided layouts from being deflected.

20. The recording medium for recording exposure data being capable of being read by a computer as in claim 19, the exposure data further comprising:

second data which have positions of the divided layouts in the layout of the semiconductor apparatus, names of the classified basic figure apertures and addresses for being capable of reading said first data, and in which the positions and the names and the addresses have correspondence to one another.

21. A recording medium for recording a program for creating exposure data thereinto being capable of being read by a computer, the program comprising:

dividing layout data of a semiconductor apparatus into sizes of basic figure apertures which take reduction in exposure into consideration;

classifying the divided layouts according to the basic figure apertures; and

obtaining overlapped portions of the divided layouts and the classified basic figure apertures so as to create first data which shows existence/non-existence of deflection at aperture sections of an aperture array.

22. The recording medium for recording a program for creating exposure data capable of being read by a computer as in claim 21, the program further comprising:

creating second data comprises

5

10

15

20

25

30

35

positions of the divided layouts in the layout of the semiconductor apparatus;

names of the classified basic figures; and addresses to be capable of reading the first data, wherein the positions, the names and the addresses have correspondence to one another.

23. A charged beam exposure method comprising:

dividing layout data of a semiconductor apparatus into sizes of basic figure apertures which take reduction in exposure into consideration;

classifying the divided layouts according to the basic figure apertures; and

emitting a beam onto a sample, the beam being shaped into a form of an overlapped portion of the divided layouts and the classified basic figure apertures.

5

15

20

25

24. The charged beam exposure method as in claim 23, wherein said emitting onto the sample comprises obtaining the overlapped portion of the divided layouts and the classified basic figure apertures so as to create first data which shows existence/non-existence of deflection at aperture sections on a blanking aperture array.

25. The charged beam exposure method as in claim 24, wherein said emitting onto the sample comprises

10 creating second data which have positions of the divided layouts in the layout of the semiconductor apparatus, names of the classified basic figures, and in which the positions and the names and the addresses have correspondence to one another.

26. The charged beam exposure method as in claim 25, wherein said emitting onto the sample comprises:

calling the position;

calling the name and the address of the basic figures which have correspondence to the called position; and

calling the first data from the address.

27. The charged beam exposure method as in claim 26, wherein said emitting onto the sample comprises:

applying a voltage for deflection control to electrodes of blanking aperture array based on the first data;

applying a control voltage to a deflector for basic figure selection based on the name of the basic figure; and

applying a control voltage to a deflector for position specifying based on the position.